

CERTIFICATION

I, Yukie KOJO, of 1-2-16 Tennou, Ichinomiya-shi, Aichi-ken, 491-0046, Japan, accompanying certified copy of the documents in respect of an application for a patent filed in Japan on the 28 day of January, 1998 and of the official certificate attached thereto, and certify that the following is a true and correct translation to the best of my knowledge and belief.

Yukie Kojo

Dated this 2 day of May, 2003

PCT/JP98/03222

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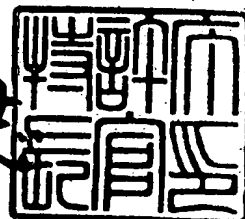
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Commissioner,
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JAPANESE GOVERNMENT

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following application as filed with this office.

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Application Number : JP 10-032082 (1998-032082)

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[List of Appended Documents]

[Document] Description 1

[Document] Abstract 1

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INTERIOR MEMBER FOR AIR BAG

[Scope of Claims for a Patent]

[Claim 1]

An interior member for an air bag having a main body provided with an air bag swelling-out port, and a cover body forming a thin wall portion which is ruptured at a time when the air bag is swollen out, in a part thereof and closing said air bag swelling-out port, characterized in that the interior member for the air bag is integrally formed in accordance with a one-color molding by a synthetic resin material, and a crack preventing layer is provided on a back surface of a general portion except the thin wall portion of said cover body, for preventing said general portion from being cracked.

[Detailed Description of the Invention]

[0001]

[Technical Field Pertinent to the Invention]

The present invention relates to an interior member for an air bag, and more particularly to a crack preventing structure of a cover body in the interior member for the air bag in which a cover body of an air bag swelling-out port is integrally molded with a main body in accordance with a one-color molding.

[0002]

[Prior Art]

In recent years, there has been provided an air bag for a front passenger seat and a so-called side air bag for improving a safety, and

in this case, the air bag is placed in an inner side of an interior member made of synthetic resin such as an instrument panel, a door trim or the like, and is swollen out into a passenger room from an air bag swelling-out port provided in this interior member. Further, generally, this air bag swelling-out port is closed by a cover body (an air bag cover) having a thin wall portion which is easily ruptured at a time when the air bag is swollen.

[0003]

By the way, in the air bag cover mentioned above, in order to prevent the air bag cover from being cracked into pieces at a time when the air bag is swollen out, physical properties such as a required flexibility and a required tensile strength are different from those of the instrument panel or the like. Accordingly, in conventional, the air bag cover is manufactured as a separate body from the instrument panel or the like which is made of a hard synthetic resin material or the like and is attached over an opening edge of the air bag swelling-out port by means of a screw fastening or the like, and a lot of labor hour is required for manufacturing and assembling. Then, for example, in Japanese Unexamined Patent Publication No. 9-2187, there is proposed an interior member for an air bag in which the labor hour mentioned above can be solved by integrally molding the air bag cover with the main body of the interior member in accordance with a two-color molding.

[0004]

[Problem to be solved by the Invention]

In this case, the labor hour for manufacturing and assembling can be reduced by the two-color molding, however, since the interior member main body and the air bag cover are made of different materials, there

are problems that both members are not continuously formed in a boundary portion, and an outer appearance is bad.

[0005]

Accordingly, the present invention solves the problem mentioned above, and an object of the present invention is to provide an interior member for an air bag which achieves an improvement of an outer appearance, and achieves both of reduction in labor hour for manufacturing and assembling and prevention of the air bag cover from being cracked.

[0006]

[Means for Solving Problem]

In order to achieve the objects mentioned above, in accordance with the present invention, there is provided an interior member (1) for an air bag having a main body (11) provided with an air bag swelling-out port (12), and a cover body (2) forming a thin wall portion (24) which is ruptured at a time when the air bag is swollen out, in a part thereof and closing the air bag swelling-out port (12), in which the interior member (1) for the air bag is integrally formed in accordance with a one-color molding by a synthetic resin material, and a crack preventing layer (7) is provided on a back surface of a general portion except the thin wall portion (24) of the cover body (2), for preventing the general portion from being cracked. This crack preventing layer can be achieved, for example, by bonding a net made of polyamide (PA) to a back surface of the cover body in accordance with an insert molding.

[0007]

In accordance with the present invention, since the interior member main body and the cover body closing the air bag swelling-out port are integrally formed in accordance with the one-color molding by the synthetic

resin material, a discontinuity caused by the difference in the material is not generated in the boundary portion between the interior member main body and the cover body, and an outer appearance is improved. Further, since the one-color integral molding is employed, it is possible to reduce the labor hour for manufacturing and assembling. Further, since the crack preventing layer is provided on the back surface of the general portion in the cover body, the cover body general portion made of the synthetic resin material is not cracked into pieces at a time when the air bag is swollen out.

[0008]

In this case, reference numerals in parentheses mentioned above show a relation of correspondence to particular means described in embodiments mentioned below.

[0009]

[Mode for Carrying out the Invention]

(First Embodiment)

In Fig. 1, there is shown an enlarged perspective view of a front passenger seat side portion of an instrument panel 1 corresponding to one embodiment of an interior member for an air bag. The instrument panel 1 is made of a polypropylene (PP) corresponding to a hard synthetic resin material mixed with a rubber or a filler, and an approximately rectangular air bag swelling-out port 12 is formed on an upper face of a main body 11 thereof at a center position in a back and forth direction (an oblique vertical direction in Fig. 1). Further, this air bag swelling-out port 12 is closed by an air bag cover 2 made of the PP material integrally formed with the instrument panel 1 in accordance with a one-color molding mentioned below. A cross section of the air bag swelling-out port 12 portion is shown

in Fig. 2.

[0010]

In Fig. 2, an outer peripheral edge 21 of the air bag cover 2 is partitioned from the instrument panel main body 11 by a recess groove 22 formed in all the periphery and having a rectangular cross section, and is continuously provided with the instrument panel main body 11. A rib 23 extending along a front line (a left line in Fig. 2) of the air bag cover 2 and linearly protruding obliquely forward is formed on a back surface of the front line, and this rib 23 is covered with a metal retainer 231, and is connected to a bracket 31 of an air bag case 3 positioned at the back of the air bag cover 2 by a bolt 41 and a nut 42. The air bag case 3 in which the air bag is received, is fixed to an insert member 13 of the instrument panel main body 11 via a bracket 32 by a bolt 43 and a nut 44.

[0011]

Back faces along three lines of the air bag cover 2 except the front line mentioned above are deep recessed in a direction of a front face, and a thin wall portion 24 which is ruptured at a time when the air bag is swollen out is formed with respect to the recess groove 22. Further, a crack preventing layer 7 is formed on the back surface of the general portion in the air bag cover 2 running into a portion close to the thin wall portion 24 from the rib 23, and in the present embodiment, a net having a lot of small holes and made of polyamide (PA) is used as the crack preventing layer 7. This net made of the PA has a sufficient flexibility and a sufficient tensile strength. In the case that the air bag is swollen, the thin wall portion 24 (Fig. 1) in three lines of the air bag cover 2 is ruptured, the air bag cover 2 is left open into a passenger room (the above in Fig.

2) around a portion near a root of the rib 23 corresponding to a hinge center, and the air bag is swollen out from the air bag swelling-out port 12. Since the net 7 made of the PA corresponding to the crack preventing layer is bonded to the back surface of the general portion at a time when the air bag cover 2 is rotated and left open around the portion near the root of the rib 23 corresponding to the hinge center, the air bag cover 2 is not cracked into pieces.

[0012]

The instrument panel 1 for the air bag as mentioned above is manufactured in accordance with a one-color insert molding described below. That is, in Fig. 3, a convex strip 52 for forming the recess groove 22 is formed on an outer periphery of a mold face in a slide type opposite mold 51 within an upper mold 5. On the other hand, a convex strip 61 for forming the thin wall portion 24 and a recess portion 62 for forming the rib 23 are formed on the mold face of the lower mold 6. A continuous molding space S1 for integrally molding the instrument panel main body 11 and the air bag cover 2 is formed between the upper mold 5 and the lower mold 6.

[0013]

The net 7 made of PA is placed on the mold face of the lower mold 6 running into one side surface of the convex strip 61 from one side surface of the recess portion 62, and this net 7 made of PA is positioned by engagement pieces 71 formed in necessary portions on the outer peripheral edge being inserted into recess portions 63 and 64 for engagement formed on the mold face of the lower mold 6. The PP material is injected into the molding space S1 mentioned above, whereby the instrument panel main body 11 and the air bag cover 2 are integrally molded, and the net 7 made of PA is bonded on the back surface of the air bag cover 2. At this time, the PP

material makes an intrusion into each of small holes in the net 7 made of PA so as to be firmly bonded to the air bag cover 2. Further, since the engagement pieces 71 are inserted into the recess portions 63 and 64 for engagement so as to be positioned, the net 7 made of PA is not displaced even when the injection pressure of PP material is applied.

[0014]

(Other Embodiments)

In this case, as the crack preventing layer, it is possible to use a soft resin material, a soft elastomer material film such as an olefin-based thermoplastic elastomer (TPO) and the like, or a nonwoven fabric, in addition to the net made of PA mentioned above.

[0015]

[Effect of the Invention]

As described above, in accordance with the interior member for the air bag on the basis of the present invention, since it is possible to integrally mold the main body of the interior member and the cover body in accordance with the one-color molding, an outer appearance is improved and a labor hour for manufacturing and assembling is reduced. Further, since the crack preventing layer is provided on the back surface of the cover body, it is also possible to prevent the cover body from cracking at a time when the air bag is swollen out.

[Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is an enlarged perspective view of a front passenger seat side portion of an instrument panel for an air bag in accordance with a first embodiment of the present invention.

[Fig. 2]

Fig. 2 is a cross sectional view along a line II-II in Fig. 1.

[Fig. 3]

Fig. 3 is a cross sectional view of a metal mold at a time of molding the instrument panel for the air bag.

[Description of Reference Numerals]

1 ... instrument panel for air bag,

11 ... instrument panel main body,

12 ... air bag swelling-out port,

2 ... air bag cover, 24 ... thin wall portion,

7 ... net made of polyamide (crack preventing layer).

Abstract

[Problem To Be Solved]

To achieve an improvement of an outer appearance, and achieves both of reduction in labor hour for manufacturing and assembling and prevention of the air bag cover from being cracked.

[Solution]

An instrument panel 1 for an air bag comprises a main body having a main body 11 provided with an air bag swelling-out port 12, and an air bag cover 2 forming a thin wall portion 24 which is ruptured at a time when the air bag is swollen out, in a part and closing the air bag swelling-out port 12. The instrument panel 1 is integrally formed in accordance with a one-color molding by a thermoplastic hard synthetic resin material, and a crack preventing layer 7 is provided by bonding a net made of polyamide with an insert molding on a back surface of a general portion except the thin wall portion 24 of the air bag cover 2.